

The Ballarat Naturalist

March 2018



Biodiversity of Leaf Litter: Introduction to Invertebrates with Special Reference to Leaf Litter Fauna. Speaker: Maxwell Campbell, President of FNCV

The talk started with a definition of 'Biodiversity' and some revealing statements on the vast and increasing losses in biodiversity, some of the human agencies involved, and impacts of the devastation that is occurring around us.

Biodiversity is the variety of all living things; the different plants, fungi, animals and micro organisms, their genetic information and inter-relationships and the ecosystems they form.



Photo: One of many photos of microscope images seen showing mixtures of invertebrates taken from samples collected from leaf litter in Victoria.

The vertebrates and other organisms that we can easily see, form less than 0.5% of living things. This talk was about some of the other 99.5% of life forms, and only those that inhabit leaf litter.

Some human impacts on the *Insectageddon*: We may have lost up to 76% of insects in some parts of Europe over the last 27 years. Even more world-wide. Who is measuring the loss? Non-human life is being lost from the planet by farming. Particularly monoculture. Pesticides and herbicides are also killing them all. Insect eating birds are also vanishing. Losing the pollinators is reducing crop yields. We need to stop the use of neonicotinoid insecticides.

Some of the ways in which humans impact on Biodiversity:



Photo: Destructive nature of forestry practice to leaf litter and biodiversity

Deforestation	Agriculture (monocultures)
Urbanisation	Overpopulation
Mining	Gene technology
Hunting/fishing	Ecotourism
Major infrastructure	Pesticides/herbicides
Nuclear technology	Antibiotic use
Waste production	Natural medicine
Military activity	Climate change
Harvesting wild foo	Fragmentation of ecosystems
Control burning	Draining of wetlands
Pest control methods	Use of fertilisers
Energy production	Feral/introduced organisms
Chemical pollution	Intro of hormone disrupters/ plastics

Until the invention of the microscope most invertebrates were unknown. *What the eye does not see, the heart does not grieve.*

\$\$\$\$\$\$	<i>FNCB Memberships due</i>	\$\$\$\$\$\$
	<i>Ordinary member</i>	\$35
	<i>Family</i>	\$55
	<i>Distant member (postage included)</i>	\$20
	<i>Student</i>	\$15
	<i>Newsletter postage for ordinary member</i>	\$12
<i>Should you wish to pay membership at a bank or on line, details are :</i>		
Field Naturalists Club of Ballarat Inc., Bendigo Bank, BSB 633 000		
Account no. 1191 12290 <i>Please remember to add your name</i>		

‘Leaf litter’ is a term for the cryptic world under our feet, and has these features:

- . A sand pit for invertebrate enthusiasts
- . An indicator of biodiversity and ecological health – ratios of groups indicate change
- . The place where ecosystem nutrients are recycled by fungi, bacteria and leaf litter animals. (Soil building activity - composting)
- . Critical to forest health, and rich source of food for small vertebrates
- . Provides cover for macro invertebrates and small vertebrates
- . Varies from site to site in many ways depending upon constituent vegetation and climate
- . Where present, termites have a significant impact
- . Thickness is related to productivity
- . The level of moisture varies considerably
- . Has seasonal and geographical variations to composition of species present and biomass.

The various faunae comprise both permanent and temporary inhabitants. Adult stages may move out of the litter for dispersal and food.

Generalised leaf litter statistics

An acre of moist soil and its litter may contain over 550kg of earthworms (Equivalent to a steer)

A m² of moist soil (10cm deep) and litter may contain over 500g invertebrates (excluding protozoa) or many tens of thousands of animals.

A m² arid soil and litter in SA = 4,500 animals – mites, collembola (*Folsomides sp*, Isotomidae) mainly and a few crustacea. Some springtails can survive dry conditions for months.

The animals in leaf litter

- A host of unseen animals lie underfoot.
- An assemblage of invertebrates known collectively as ‘cryptozoa’.
- Most need a lot of moisture at least some of the time.
- Many are under 1 mm in length.

Often termed primitive, they are highly adapted to their niche. They may resemble earliest terrestrial invertebrates as we imagine them.

Leaf litter invertebrate fauna

We were shown a number of extremely high quality photographs from a limited range of invertebrate Phyla from leaf litter, including examples from: Protozoa; Nemertea; Platyelminthes; Nematodes and other pseudocoelomates; Annelids; Molluscs; Arthropods; and Tardigrads.

Of the many photos of impressive microscope images, most were slides showing mixtures of invertebrates taken from samples collected from leaf litter in Victoria.

Photos below taken via a microscope



Photo: left Pseodoscopian



Photo right: A flatworm

In summary, Max provided the following lists of points about leaf litter and its importance to ecosystems and to life on earth:

- . A diverse and complex system of many organisms
- . Many complex interactions
- . Build soil and influence its fertility - recycling

- . The organisms mix the soil and aerate it
- . A productive leaf litter is critical to ecosystem (forest) health
- . A sensitive system requiring long periods of stability and low disturbance to develop.

Life on Earth

A diverse and complex system of organisms

There is no certainty about the total number of species on Earth

The complexity of living things and their mutual interactions is poorly known

Biodiversity is the result of at least 3.5 billion years of evolution

It evolved through a succession of complex processes and circumstances in fortuitous order. Once destroyed the chances of restoring it are remote.

The presentation made us think seriously about the importance of leaf litter and the vast losses occurring around us, but also about miniscule range of animals that most of us deal with as field naturalists. The quality of the talk and slides was outstanding and we thank Maxwell for all the effort and professionalism.

Report written by John Petheram using some text from speaker

Western Treatment Plant Bird Excursion – 4th Feb

Seventeen members in 5 cars left Ballarat at 8:30am to journey along the Midland Highway to the outskirts of Geelong and on to the Western Treatment Plant. This is an excursion made every two years but last year was skipped so that the Avalon air show was avoided.

First stop was to the “T section”. As was expected we were greeted by birds everywhere. Whilst the Black Swans were only glanced at as they are often seen locally; Pink-eared Ducks, the majestic Black-winged Stilts and a couple of Yellow-billed Spoonbills were a pleasure to see.

An effort had to be made to scan through the hordes to spot the small waders and ponder again at the marvel that brings them to Victoria each summer, even if a few of us need to be reminded of identification. But the highlight here, and one for the day, was seeing a pair of Glossy Ibis which John indicated was a rare sighting and certainly two birds, amongst the thousands that enjoy this habitat, is a small percentage.

A little later a Golden-headed Cisticola close at the top of reeds was a notable sighting as were glimpses of a few more later in the day. It

Bird List for Excursion to Werribee Treatment Plant
Prepared by John Gregurke

Musk Duck
Freckled Duck
Cape Barren Goose
Black Swan
Australian Shelduck
Pink-eared Duck
Australasian Shoveler
Grey Teal
Chestnut Teal
Pacific Black Duck
Hardhead
Australasian Grebe
Hoary-headed Grebe
Crested Pigeon
Little Pied Cormorant
Little Black Cormorant
Pied Cormorant
Australian Pelican
White-faced Heron
Glossy Ibis
Australian White Ibis
Straw-necked Ibis
Yellow-billed Spoonbill
Whistling Kite
Swamp Harrier
Nankeen Kestrel
Australian Hobby
Black Falcon
Brolga
Purple Swamphen
Eurasian Coot

**Photos belowtaken by the
Da Imans**



Photo: Pick-eared Ducks



Photo: How many different birds can you see in this picture?

Australian Pied Oystercatcher
Black-winged Stilt
Red-necked Avocet
Red-capped Plover
Black-fronted Dotterel
Masked Lapwing
Common Greenshank
Marsh Sandpiper
Red-necked Stint
Sharp-tailed Sandpiper
Whiskered Tern
Crested Tern
Silver Gull
Superb Fairy-wren
Yellow-rumped Thornbill
Red Wattlebird
White-fronted Chat
Australian Magpie
Willie Wagtail
Little Raven
Magpie-lark
Golden-headed Cisticola
Little Grassbird
Welcome Swallow
Fairy Martin
Common Starling
House Sparrow
Australasian Pipit

Australian Pied Oystercatcher
Black-winged Stilt
Red-necked Avocet
Red-capped Plover
Black-fronted Dotterel
Masked Lapwing
Common Greenshank
Marsh Sandpiper
Red-necked Stint
Sharp-tailed Sandpiper
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Yellow-rumped Thornbill
Red Wattlebird
White-fronted Chat
Australian Magpie
Willie Wagtail
Little Raven
Magpie-lark
Golden-headed Cisticola
Little Grassbird
Welcome Swallow
Fairy Martin
Common Starling
House Sparrow
Australasian Pipit

Lunch was taken at the bird hide at the mouth of Little River. After leaving, a pause was made to see if there were Blue-billed Ducks in a spot where they have been seen in the past, but as for a December visit they were elusive.

The route out was inland along South Road then around past Lake Borrie, stopping at this favourite location for a last look at the flocks of ducks, pelicans and cormorants perching on artificial structures.

Peter Dalman

Exhibition at the Ballarat Art Gallery Feb 25th to May27th

*Collection usually housed at the Victorian Herbarium.
The exhibition will cover art, science, history and*

Club Meeting Minutes

February 2

Attend: President John Gregurke warmly welcomed 30 members and three visitors. **Apol:** Bill & Kathy Elder, Ken Hammond, Mark Moravec, Sue McLachlan and Bernadette Cheesman.

Business Arising from Correspondence:

Donation to proposed development of a Fungi Guide for land managers: D. Thurgood moved that Club members accept the Committee's recommendation of a \$250 Club pledge.

FNCB Representative to attend next DELWP Biodiversity Response Planning Workshop in Melb focused on "Engagement"?

Does anyone have any information or photos about our Club's joint excursion with the Geelong FNC in 1964 to Lal Lal re. the Anchor Plant, or the seed collection/ planting/ maintenance of the Anchor Plant at Lal Lal since 1988-2018 that we should share with Trevor Pescott for an article he plans to write for The Geelong Naturalist? Elspeth & Andy recommended Trevor look up the TRIM file at DELWP. Site monitoring was undertaken in the early 2000's by DELWP (DSE) staff. Phillip Norman organised mination trials assisted by the FNCB at the Forestry Services ngerursery in Creswick in 1988. Greg Binns recorded more information about the project:

Reminder re prompt registration for ANN 2018 Get-together and SEANA Autumn Camp. Maxwell Campbell told us that Alex Maissey from the Lyrebird Study Group will be presenting a fabulous opening night talk at the SEANA Autumn Camp.

Rupert Baker from Healesville Sanctuary is the Saturday night speaker. Hope to have a behind the scenes tour around the Sanctuary organised too.

Reports: Treasurer's Report: Opening bal: \$7,905.10 Inc \$128.76 Exp \$191.90 Adjustment of \$30.30 for unrepresented cheque. Closing bal: \$7,872.26

General Business

Next meeting, Friday March 2: AGM and Member's Images. Please consider nominating to join the committee (see Emily for a Nomination Form), and bring a few photos on a USB stick of coastal features to share with members along with a brief natural history story associated with them.

Congratulations to John Mildren on being awarded the Medal of the Order of Australia on Australia Day!

Show & Tell/ Field Reports

The first surprising field report was of snow! Peter & Claire, Andy and Carol had been up at Mt Hotham with the Victorian Nature Photography Group.

John P. reported a Marbled Gecko that had drowned in his pool at Black Hill, along with what he thinks was a black and white Grape Vine Butterfly sporting orange hairy legs.

Denis T. reported large numbers of Yellow-tailed Black Cockatoos in the pine plantation behind his place in Beaufort.

Peter N. described the nightly arrival (for a week in December) of 80-90 Australasian White Ibis to roost in the trees around his wetland in Scarsdale, before rejoining a passing flock each morning.

Elizabeth T. shared the sighting of three Brolgas by a friend in Smiths Lane, Beaufort, and a Brown Snake going for its morning swim at the Beaufort Pool that led to the evacuation of all other swimmers.

Paul N. spotted Painted Button-quail living in his Mt Egerton garden, as well as his first sighting of a Whistling Kite there, flying over the driveway.

Andy A. observed Blue-banded Bees buzz-pollinating the flowers of *Isotoma* in his garden at Alfredton.

Wayne had the disappointing report of a pair of Indian Mynas flying between the weedy roadside and a Cypress at the 100km sign on Ballarat-Carngham Road.

John Mildren had the delight of watching Sacred Kingfishers feeding young in a hollow at Fairyland.

Margaret T. heard Lorikeets screeching near her house in Nerrina at 7pm one night, and looked up to see about two dozen of them harassing a Wedge-tailed Eagle that soon moved on.

March Excursion

Saturday, Mar 24

Departure from usual meeting place
at the earlier time of 7.15 am

Excursion combined with Leon Altoff of FNCV with the Marine Research Group for study of Ecology of Littoral Zone, Danger Pt., Torquay.

Wear suitable footwear for rocky shore platforms.

New committee members, please

The committee is urgently looking for members who are willing to join the group and share their interests and talents to support the work of FNCB. (Committee meetings are fun! Ask its members. It has been short of two members for the past year.)

Nomination forms are now available at the meeting or from the secretary. Please consider nominating.

CALENDAR 2018

March 2018

Fri 2 *AGM & Club members' images of coastal features*

Sat 24 **Excursion Depart time 7.15 am**
Ecology of the littoral zone, Torquay: Leon Altoff,
 FNCV Marine research group (See P. 10)

Tues 27 Committee meeting Andy's

April

Fri 6 *Around Marble Bar - Geology and Geography:* Eliza
 beth Thurgood, club member

Sun 8 *Goldfields' heritage shallow diggings and water supply*
Raglan; & Wetland in Stoneleigh : Elizabeth Thurgood
 Club member

Sat 14 Possible FNCB Display at Farmers' Market

Tues 24 Committee meeting TBA

Committee

President	John Gregurke
Vice Pres	Fran Hanrahan
Secretary	Emily Noble
Treasurer	Les Hanrahan
Andy Arnold	Val Hocking
Bill Elder	John Mildren

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Meetings are held at the Primary Industries Training Centre, cnr of Gillies and Gregory Sts, on the first Friday of the month at 7.30pm..

Excursions: Leave from the carpark at the Primary Industries Training Centre, cnr Gillies and Gregory Sts. at 9.30 am, unless otherwise advised.

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